WHAT IS CLAIMED IS:

1   1.   A system for monitoring an industrial process, the system
2 comprising;
3   a process controller; an input module coupled to the process controller, the
4 input module being adapted to input a plurality of parameters from a process for
5 manufacture of a substance;
6   a computer aided process module coupled to the process controller, the
7 computer aided process module being adapted to compare at least two of the plurality
8 of parameters against a predetermined training set of parameters, and being adapted to
9 determine if the at least two of the plurality of parameters are within a predetermined
10 range of the training set of parameters; and
11   an output module coupled to the process controller, the output module
12 being adapted to output a result based upon the determining step.

1   2.   The system of claim 1 wherein the substance is selected from a
2 petroleum product, a chemical product, a food product, a health product, a cleaning
3 product, a biological product, and other fluid or objects.

1   3.   The system of claim 1 wherein the plurality of parameters are
2 selected from an intrinsic element or an extrinsic element of the process.

1   4.   The system of claim 1 wherein the input module, the computer
2 aided process module, and the output module are provided in a computer software
3 program.

1   5.   The system of claim 1 wherein the computer aided process includes
2 an algorithm selected from PCA, HCA, KNN CV KNN Prd, SIMCA CV, SIMCA Prd,
3 Canon Prd, SCREAM, and Fisher CV.

1   6.   The system of claim 1 further comprising a normalizing module
2 coupled to the process controller, the normalizing module being adapted to normalize
3 each of the plurality of parameters before input into the computer aided process module.

1   7.   The system of claim 1 wherein the training step of parameters are
2 preprocessed in at least two of the computer aided processes.

1   8.   The system of claim 1 wherein the result is an affirmative response

2 or a .negative response, where the response is displayed on a terminal.

1   9.   The system of claim 1 wherein the computer aided process is

2 selected from a library comprising a plurality of processes.

1   10.   The system of claim 9 wherein the plurality of processes includes

2 at least a comparing process, a contrasting process, and a functional process.

1   11.   A system for monitoring an industrial process for the manufacture

2 of materials or objects, the system comprising:

3   an input module, the input module being adapted to input a plurality of

4 process parameters from a process for manufacture of a substance or object;

5   a library module coupled to the input module, the library module including

6 a plurality of computer aided processes, each of the computer aided processes being

7 capable of determining an output based upon a predetermined training set of the

8 plurality of process parameters;

9   an output module coupled to the library module, the output module being

10 adapted to output a result based upon the predetermined training set and the plurality

11 of process parameters;

12   wherein each of the computer aided processes compares at least two of the

13 plurality of process parameters against a portion of the training set of parameters and

14 determines if the at least two of the plurality of process parameters are within a

15 predetermined range of the portion of the training set of parameters.

1   12.   The system of claim 11 wherein the substance is selected from a

2 petroleum product, a chemical product, a food product, a health product, a cleaning

3 product, a biological product, and other fluid or objects.

1   13.   The system of claim 11 wherein the plurality of process parameters

2 are selected from an intrinsic element or an extrinsic element of the process.

1   14.   The system of claim 11 wherein the input module, the library

2 module, and the output module are provided in a computer software program.

1   15.   The system of claim 11 wherein the computer aided process
2 includes an algorithm selected from PCA, HCA, KNN CV KNN Prd, SIMCA CV,
3 SIMCA Prd, Canon Prd, SCREAM, and Fisher CV.

1   16.   The system of claim 11 wherein the training set of parameters are
2 preprocessed.

1   17.   The system of claim 11 wherein the process parameters comprise at
2 least olfactory information.

1   18.   The system of claim 11 wherein the result is an affirmative
2 response or a negative response, where the response is displayed on a terminal.

1   19.   The system of claim 11 wherein the library module comprises a
2 plurality of processes.

1   20.   The system of claim 19 wherein the plurality of processes includes
2 at least a comparing process, a contrasting process, and a functional process.

1   21.   A system for controlling a process, the system comprising:
2   a first field mounted device in communication with a process and
3 configured to produce a first input; and
4   process manager receiving the first input and configured to apply a first
5 model to the first input to identify a first predicted descriptor characteristic of a state of
6 the process, and configured to consult a first knowledge based system to provide an
7 output based upon the first predicted descriptor.

1   22.   The system of claim 21 wherein the process manager is a server in
2 communication with the first field mounted device via a computer network.

1   23.   The product of claim 21 wherein the process manager is a server in
2 communication with a user through a network of computers utilizing a browser software
3 program.

1   24.   The product of claim 23 wherein the process manager is in
2 communication with the first field mounted device via the computer network.

1   25.   The system of claim 21 further comprising a second field mounted

2 device receiving the output and adjusting an operational parameter of the process

3 according to the output.

1   26.   The system of claim 21 further comprising an output module

2 including an interface between the process manager and an associated system including at

3 least one of a legacy system, an e-enterprise system, and a desktop application.

1   27.   The system of claim 21 wherein the first knowledge based system

2 is an expert system.

1   28.   The system of claim 21 wherein the model is constructed utilizing

2 one of a univariate statistical technique, a multivariate statistical technique, a time series

3 analysis, and a neural-based technique.

1   29.   The system of claim 21 further comprising a library configured to

2 store one of a group of different algorithms utilized to construct the first model.

1   30.   The system of claim 21 further comprising a library configured to

2 store one of a group of different algorithms utilized to construct the first model.

1   31.   The system of claim 21 further comprising a second model, the

2 process manager configured to apply the second model to the data to identify a second

3 predicted descriptor characteristic of the process data, the process manager further

4 configured to produce the output based upon the first predicted descriptor and the second

5 predicted descriptor.

1   32.   The system of claim 21 further comprising:

2   a second model; and

3   a second knowledge based system, the process manager applying the

4 second model to the data to identify a second predicted descriptor characteristic of the

5 process data, the second knowledge based system submitting one of the first predicted

6 descriptor and the second predicted descriptor to the first knowledge based system where

7 the first predicted descriptor is different from the second predicted descriptor.

52